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PTO/SB/98 (08-00)

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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**STATEMENT UNDER 37 CFR 3.73(b)**

Applicant/Patent Owner: Quickturn Design Systems, Inc.

Application No./Patent No.: 09/655,596

Filed/Issue Date: 09-06-00

Entitled: High Speed Software Driven Emulator Comprised of a Plurality of Emulation Processors with a Method to Allow Memory Read/Writes Without Interrupting the Emulation.

Quickturn Design Systems, Inc

a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of an undivided part interest

in the patent application/patent identified above by virtue of a chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: William F. Beausoleil, Bryan R. Cook, Tak-Kwong Ng, Helmut Roth, Peter Tannenbaum, Lawrence A. Thomas and Norton J. Tomassetti

To: International Business Machines Corporation

The document was recorded in the United States Patent and Trademark Office at Reel 011145, Frame 0432, or for which a copy thereof is attached.

2. From: International Business Machines Corporation To: Cadence Design Systems, Inc. A copy of a document evidencing this assignment is being recorded herewith. A copy of this document is attached as Exhibit 1.

3. From: Cadence Design Systems, Inc. To: Quickturn Design Systems, Inc. A copy of a document evidencing this assignment is being recorded herewith. A copy of this document is attached as Exhibit 2.

**[NOTE:** A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.8]

The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of the assignee.

April 22, 2002

Date

Signature

R.L. Smith McKeithen

Typed or printed name

Secretary

Title

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

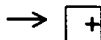
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MAY 09 2002

Technology Center 2100

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box



PTO/SB/82 (10-00)

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# REVOCATION OF POWER OF ATTORNEY OR AUTHORIZATION OF AGENT

Applicati n Number	09/655,596
Filing Date	09-06-00
First Named Invent r	Beausoleil, W.F., et al
Group Art Unit	2123
Examiner Name	Not Yet Assigned
Attorney Docket Number	272/206

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I hereby revoke all previous powers of attorney or authorizations of agent given in the above-identified application:

☒ A Power of Attorney or Authorization of Agent is submitted herewith.

OR

☐ Please change the correspondence address for the above-identified application to:

☐ Customer Number



PATENT TRADEMARK OFFICE

OR

☐ Firm or Individual Name

Address

Address

City

Country

State

ZIP

Telephone

Fax

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I am the:

☐ Applicant/Inventor.

☒ Assignee of record of the entire interest. See 37 CFR 3.71.  
Certificate under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

## SIGNATURE of Applicant or Assignee of Record

Name

R. L. Smith McKeithen, Secretary

Signature

Date

April 22, 2002

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☐ \*Total of forms are submitted.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



## NOTICE OF PATENT ASSIGNMENT

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This **NOTICE OF PATENT ASSIGNMENT** (the "Notice") is executed as of the date below, by **INTERNATIONAL BUSINESS MACHINES CORPORATION**, a New York corporation ("IBM").

**WHEREAS**, IBM has entered into a "Patent Assignment Agreement" (the "Agreement") with **CADENCE DESIGN SYSTEMS, INC.**, a Delaware corporation ("CADENCE"), dated February 27, 2002 ("Effective Date"), pursuant to which IBM has agreed to, among other things, assign to CADENCE certain United States patents.

**WHEREAS**, IBM and CADENCE wish to evidence the assignment of such patent rights made in the Agreement with this document.

NOW, THEREFORE, for good and valuable consideration, IBM agrees as follows:

### ARTICLE I IBM PATENTS

**RECEIVED**

"IBM Patents" shall mean the patent applications listed in Attachment A **MAY 0 9 2002**

### ARTICLE II ASSIGNMENTS

Technology Center 2100

Effective on the Effective Date, and subject to the terms and conditions of the Agreement, including certain reserved rights, IBM has assigned, transferred and conveyed to CADENCE all of IBM's right, title and interest in the IBM Patents.

**IN WITNESS WHEREOF**, IBM has caused this Notice to be executed.

**INTERNATIONAL BUSINESS MACHINES CORPORATION**

By: 

Gerald Rosenthal

Vice President, Intellectual Property and Licensing

Date: March 8, 2002

**ATTACHMENT A TO IBM PATENT ASSIGNMENT ACKNOWLEDGEMENT**

09/655,596

09/656,541

09/193,733

09/523,053

09/656,146

09/373,125

09/655,595

09/656,147

09/796,055

09/522,354

**STATEMENT UNDER 37 CFR 3.73(b)**Applicant/Patent Owner: Cadence Design Systems, Inc.Application No./Patent No.: 09/655,596Filed/Issue Date: 09-06-00Entitled: High Speed Software Driven Emulator Comprised of a Plurality of Emulation Processors with a Method to Allow Memory Read/Writes Without Interrupting the Emulation.Cadence Design Systems, Inc.a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of an undivided part interest

in the patent application/patent identified above by virtue of a chain of title from the inventor(s) Technology Center 2100  
 application/patent identified above, to the current assignee as shown below:

1. From: William F. Beausoleil, Bryan R. Cook, Tak-Kwong Ng, Helmut Roth, Peter Tannenbaum, Lawrence A. Thomas and Norton J. Tomassetti

To: International Business Machines Corporation

The document was recorded in the United States Patent and Trademark Office at Reel 011145, Frame 0432,  
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The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of the assignee.

April 22, 2002

Date

Signature

R.L. Smith McKeithen

Typed or printed name

Secretary

Title

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



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# **POWER OF ATTORNEY OR AUTHORIZATION OF AGENT**

<b>Application Number</b>	09/655,596
<b>Filing Date</b>	09-06-00
<b>First Named Inventor</b>	Beausoleil, W.F., et al
<b>Group Art Unit</b>	2123
<b>Examiner Name</b>	Not Yet Assigned
<b>Attorney Docket Number</b>	272/206

I hereby appoint:

☒ Practitioners at Customer Number

22249

OR

☐ Practitioner(s) named below:

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

☒ The above-mentioned Customer Number. Direct all correspondence to Jeffrey A. Miller, Esq.

☐ Practitioners at Customer Number

OR

☐ Firm or  
Individual Name

Address

Address

City

State

ZIP

Country

Telephone

Fax

I am the:

☐ Applicant/Inventor.

☒ Assignee of record of the entire interest. See 37 CFR 3.71.

Certificate under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

## **SIGNATURE of Applicant or Assignee of Record**

Name R.L. Smith McKeithen, Secretary, Quickturn Design Systems, Inc.

Signature

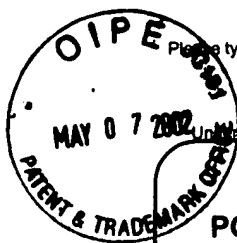
Date

April 22, 2002

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☐ \*Total of forms are submitted.

Burden Hour Statement: This form is estimated to take 3 minutes to complete. Time will vary depending upon the needs of the individual case. Any Comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



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AUTHORIZATION OF AGENT**

Applicati n Number	09/655,596
Filing Date	09-06-00
First Named Inv nt r	Beausoleil, W.F., t al
Group Art Unit	2123
Examiner Name	Not Yet Assigned
Attorney Docket Number	272/206

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☒ Practitioners at Customer Number

22249

OR

☐ Practitioner(s) named below:

Name	Registration Number



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as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

☒ The above-mentioned Customer Number. Direct all correspondence to Jeffrey A. Miller

☐ Practitioners at Customer Number

OR



<input type="checkbox"/> Firm or Individual Name					
Address					
Address					
City		State		ZIP	
Country					
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I am the:

☐ Applicant/Inventor.

☒ Assignee of record of the entire interest. See 37 CFR 3.71.

Certificate under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

**SIGNATURE of Applicant or Assignee of Record**

Name	R.L. Smith McKeithen, Secretary, Cadence Design Systems, Inc.
Signature	
Date	April 22, 2002

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☐ \*Total of      forms are submitted.

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This **NOTICE OF PATENT ASSIGNMENT** (the "Notice") is executed as of the date below, by **INTERNATIONAL BUSINESS MACHINES CORPORATION**, a New York corporation ("IBM").

**WHEREAS**, IBM has entered into a "Patent Assignment Agreement" (the "Agreement") with **CADENCE DESIGN SYSTEMS, INC.**, a Delaware corporation ("CADENCE"), dated February 27, 2002 ("Effective Date"), pursuant to which IBM has agreed to, among other things, assign to CADENCE certain United States patents.

**WHEREAS**, IBM and CADENCE wish to evidence the assignment of such patent rights made in the Agreement with this document.

NOW, THEREFORE, for good and valuable consideration, IBM agrees as follows:

### ARTICLE I IBM PATENTS

"IBM Patents" shall mean the patent applications listed in Attachment A.

### ARTICLE II ASSIGNMENTS

Effective on the Effective Date, and subject to the terms and conditions of the Agreement, including certain reserved rights, IBM has assigned, transferred and conveyed to CADENCE all of IBM's right, title and interest in the IBM Patents.

**IN WITNESS WHEREOF**, IBM has caused this Notice to be executed.

**INTERNATIONAL BUSINESS MACHINES CORPORATION**

By: 

Gerald Rosenthal

Vice President, Intellectual Property and Licensing

Date: March 8, 2002

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MAY 09 2002

Technology Center 2100



**ATTACHMENT A TO IBM PATENT ASSIGNMENT ACKNOWLEDGEMENT**

09/655,596  
09/656,541  
09/193,733  
09/523,053  
09/656,146  
09/373,125  
09/655,595  
09/656,147  
09/796,055  
09/522,354

## ASSIGNMENT OF PATENT APPLICATIONS

Whereas, CADENCE DESIGN SYSTEMS, INC., a corporation organized and existing under and by virtue of the laws of the Delaware and having its place of business at 2655 Seely Avenue, San Jose, California 94134 ("CADENCE"), owns of all right, title and interest in the inventions claimed and/or disclosed in following United States Patent Applications ("the Patent Applications"):

<b>Patent Application Number</b>	<b>Date Patent Application Filed</b>	<b>Inventors</b>	<b>Title</b>
09/655,596	09-06-00	Beausoleil, W.F., et al	High Speed Software Driven Emulator Comprised of a Plurality of Emulation Processors with a Method to Allow Memory Read/Writes Without Interrupting the Emulation
09/656,541	09-06-00	Beausoleil, W.F., et al	High Speed Software Driven Emulator Comprised of a Plurality of Emulation Processors with a Method to High Speed Bulk Read/Write Operation Synchronous DRAM While Refreshing the Memory
09/193,733	11-17-98	Ruedinger, J.	Algorithm to Separate Clock Domains for Emulation Purposes
09/523,053	03-10-00	Ruedinger, J., et al	Methods to Improve Concurrent Behavior Modeling with Emulation
09/656,146	09-06-00	Beausoleil, W.F., et al	High Speed Software Driven Emulator Comprised of a Plurality of Emulation Processors with

			Improved Multiplexed Data Memory
09/373,125	08-12-99	Beausoleil, W.F., et al	Clustered Processors in an Emulation Engine
09/655,595	09/06/00	Beausoleil, W.F., et al	High Speed Software Driven Emulator Comprised of a Plurality of Emulation Processors with an Improved Board-to-Board Interconnection Cable
09/656,147	09/06/00	Beausoleil, W.F., et al	High Speed Software Driven Emulator Comprised of a Plurality of Emulation Processors with an Improved Maintenance Bus that Streams Data
09/796,055	02-28-00	Beausoleil, W.F., et al	High Bandwidth 3D Memory Packaging Technique
09/522,354	03-09-00	Musselman, R., et al	Non-synchronous Hardware Emulator

Whereas QUICKTURN DESIGN SYSTEMS, INC., a corporation organized and existing under and by virtue of the laws of the Delaware and having its place of business at 2655 Seely Avenue, San Jose, California 94134 ("QUICKTURN"), is desirous of acquiring the entire right, title and interest in the inventions claimed and/or disclosed in the Patent Applications;

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, CADENCE hereby sells, assigns, transfers and sets over unto QUICKTURN, its successors and assigns, the full and exclusive right, title and interest to the inventions claimed and/or disclosed in the Patent Applications and to all Letters Patent or application or similar legal protection, not only in the United States and its territorial possessions, but in all countries foreign thereto to be obtained for the inventions claimed and/or disclosed in the Patent Applications, and to any continuation, division, renewal, substitute or reissue thereof or any legal equivalent thereof in the United States or a foreign country for the full term or terms for which the same may be granted, including all priority rights under the International Convention; the Patents to be held and enjoyed by QUICKTURN for its own use and behalf, and for QUICKTURN'S legal

representatives and assigns, to the full end of the term for which any Letters Patents are granted, as fully and entirely as the same would have been held by CADENCE had this assignment and sale not been made. CADENCE hereby authorizes and requests the United States Commissioner of Patents and Trademarks and any officials of foreign countries whose duty it is to issue patents or any legal equivalent thereof to QUICKTURN, its successors and assigns, in accordance with this Assignment.

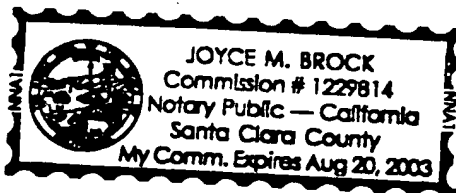
Executed this 22nd day of April, 2002, at  
San Jose, CA

R.L. Smith McKeithen  
R.L. Smith McKeithen  
Secretary, CADENCE DESIGN SYSTEMS, INC.

STATE OF CALIFORNIA )  
 ) ss  
COUNTY OF SANTA CLARA )

On 4/22/02 before me, Joyce M. Brock, personally appeared  
R.L. Smith McKeithen ☒ personally known to me - OR - ☐ proved to me on the basis  
of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within  
instrument and acknowledged to me that he/~~she~~/they executed the same in his/~~her~~/~~their~~  
authorized capacity(~~ies~~), and that by his/~~her~~/~~their~~ signature(~~s~~) on the instrument the person(s), or  
the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.



Joyce M. Brock  
Notary Public in and for said County and State